CLAIMS

What is claimed is:

1. A method comprising:

converting color data for an image to be displayed from a first color space to a second color space;

modifying, in the second color space, a color intensity for one or more portions of the image;

converting the modified color data from the second color space to a third color space;

applying a gamma transformation on the modified color data in the third color space to generate adjusted color data for one or more portions of the image; and

storing the adjusted color data in a frame buffer.

2. The method of claim 1 wherein the color intensity is modified before the gamma transformation is applied.

3. The method of claim 1 wherein the gamma transformation is applied before the color intensity is modified.

4. The method of claim 1 wherein the third color space is the color space to be used to display the image.

5. The method of claim 1 wherein the first color space and the third color space are the same color space.

6. The method of claim 1 wherein the first color space comprises a red-green-blue (RGB) color space and the second color space comprises a hue-saturation-intensity (HSI) color space.

7. The method of claim 1 wherein the first color space comprises a YUV color space and the second color space comprises a hue-saturation-intensity (HSI) color space.

8. The method of claim 1 wherein the first color space is chosen from the group of YUV, YCrCb, CIE, HSV, YIQ, CMYK, RBGA, Pantone, Munsell, NCS and the second color space is chosen from the group of YUV, YCrCb, CIE, HSV, YIQ, CMYK, RBGA, Pantone, Munsell, NCS.

9. The method of claim 1 wherein applying the color transformation on the color data in the second color space comprises:

determining an image brightness profile for the image to be displayed;

generating a color transformation in the second color space based on the image brightness profile; and

applying the color transformation to the color data.

10. The method of claim 9 further comprising modifying a backlight intensity based on the image brightness profile.

11. The method of claim 1 wherein applying the color transformation on the color data in the second color space comprises:

determining am ambient light level for an environment for a display device;

generating a color transformation in the second color space based on the ambient light level; and

applying the color transformation on the color data.

12. The method of claim 11 further comprising modifying a backlight intensity based on the ambient light level.

13. An apparatus comprising:

a first memory to store color data for in image to be displayed, wherein the color data is stored in a first color space;

a first conversion agent communicatively coupled with the first memory to receive the color data in the first color space and to convert the color data to a second color space;

a color brightness agent communicatively coupled with the first conversion agent to modify color brightness characteristics, using the second color space, of one or more portions of the image to be displayed;

a second conversion agent communicatively coupled with the color brightness agent to convert the color data from the second color space to a third color space;

a gamma control agent communicatively coupled with the second conversion agent to selectively perform a gamma transformation on the color data in the third color space; and

a second memory communicatively coupled with the gamma control agent to store the modified color data in the third color space.

14. The apparatus of claim 13 wherein the color brightness characteristics are modified before the gamma transformation is applied.

15. The apparatus of claim 13 wherein the gamma transformation is applied before the color brightness characteristics are modified.

16. The apparatus of claim 13 wherein the third color space is the color space to be used to display the image.

17. The apparatus of claim 16 further comprising:

a color control agent communicatively coupled with the second memory to further modify the modified color data in the third color space; and

a third memory communicatively coupled with the color control agent to store the further modified color data in the third color space.

18. The apparatus of claim 17 wherein the first memory, the second memory and the third memory comprise a single memory device.

19. The apparatus of claim 17 wherein the color control agent comprises a processor executing instructions.

20. The apparatus of claim 17 wherein the color control agent uses a color look-up table storing data in the first color space to further modify the color data.

21. The apparatus of claim 13 wherein the first color space comprises a red-green-blue (RGB) color space and the second color space comprises a hue-saturation-intensity (HSI) color space.

22. The apparatus of claim 13 wherein the first color space comprises a YUV color space and the second color space comprises a hue-saturation-intensity (HSI) color space.

23. The apparatus of claim 13 wherein the first color space is chosen from the group of YUV, YCrCb, CIE, HSV, YIQ, CMYK, RBGA, Pantone, Munsell, NCS and the second color space is chosen from the group of YUV, YCrCb, CIE, HSV, YIQ, CMYK, RBGA, Pantone, Munsell, NCS.

24. The apparatus of claim 13 wherein the color brightness agent comprises a processor executing instructions.

25. The apparatus of claim 13 wherein the color brightness agent uses a color look-up table or gamma transfer function storing data in the second color space to modify the color data.

26. The apparatus of claim 13 further comprising an ambient light sensor communicatively coupled with the brightness control agent to provide data indicating an ambient light level, wherein the brightness control agent uses the ambient light level to modify the color data.

27. The apparatus of claim 13 wherein the brightness control agent further controls a backlight intensity of a display device.

28. An article comprising a computer-readable medium having stored thereon instructions that, when executed, cause one or more processors to:

convert color data for an image to be displayed from a first color space to a second color space;

modify, in the second color space, a color intensity for one or more portions of the image;

convert the modified color data from the second color space to a third color space;

apply a gamma transformation on the modified color data in the third color space to generate adjusted color data for one or more portions of the image; and

store the adjusted color data in a frame buffer.

29. The article of claim 28 wherein the color intensity is modified before the gamma transformation is applied.

30. The article of claim 28 wherein the gamma transformation is applied before the color intensity is modified.

31. The article of claim 28 wherein the third color space is the color space to be used to display the image.

32. The article of claim 28 wherein the first color space and the third color space are the same color space.

33. The article of claim 28 wherein the first color space comprises a red-green-blue (RGB) color space and the second color space comprises a hue-saturation-intensity (HSI) color space.

34. The article of claim 28 wherein the first color space comprises a YUV color space and the second color space comprises a hue-saturation-intensity (HSI) color space.

35. The article of claim 28 wherein the first color space is chosen from the group of YUV, YCrCb, CIE, HSV, YIQ, CMYK, RBGA, Pantone, Munsell, NCS and the second color space is chosen from the group of YUV, YCrCb, CIE, HSV, YIQ, CMYK, RBGA, Pantone, Munsell, NCS.

36. The article of claim 28 wherein the instructions that cause the one or more processors to apply the color transformation on the color data in the second color space comprise instructions that, when executed, cause the one or more processors to:

determine an image brightness profile for the image to be displayed;

generate a color transformation in the second color space based on the image brightness profile; and

apply the color transformation to the color data.

37. The article of claim 36 further comprising instructions that, when executed, cause the one or more processors to modify a backlight intensity based on the image brightness profile.

38. The article of claim 28 wherein the instructions that cause the one or more processors to apply the color transformation on the color data in the second color space comprise instructions that, when executed, cause the one or more processors to:

determine am ambient light level for an environment for a display device;

generate a color transformation in the second color space based on the ambient light level; and

apply the color transformation on the color data.

39. The article of claim 38 further comprising instructions that, when executed, cause the one or more processors to modify a backlight intensity based on the ambient light level.

40. A system comprising:

a bus;

a first memory coupled with the bus to store color data for in image to be displayed, wherein the color data is stored in a first color space;

a first conversion agent communicatively coupled with the bus to receive the color data in the first color space and to convert the color data to a second color space;

a color brightness agent communicatively coupled with the bus to modify color brightness characteristics of one or more portions of the image to be displayed;

a second conversion agent communicatively coupled with the bus to convert the modified color data from the second color space to a third color space;

a gamma control agent communicatively coupled with the second conversion agent to selectively perform a gamma transformation on the color data in the third color space;

a second memory communicatively coupled with the bus to store the color data in the third color space; and

an ambient light sensor communicatively coupled with the first conversion agent.

41. The system of claim 40 wherein the color brightness characteristics are modified before the gamma transformation is applied.

42. The system of claim 40 wherein the gamma transformation is applied before the color brightness characteristics are modified.

43. The system of claim 40 wherein the third color space is the color space to be used to display the image.

44. The system of claim 43 further comprising:

a color control agent communicatively coupled with the second memory to further modify the modified color data in the third color space; and

a third memory communicatively coupled with the color control agent to store the further modified color data in the third color space.

45. The system of claim 44 wherein the first memory, the second memory and the third memory comprise a single memory device.

46. The system of claim 44 wherein the color control agent uses a color look-up table storing data in the first color space to further modify the color data.

47. The system of claim 40 wherein the first color space comprises a red-green-blue (RGB) color space and the second color space comprises a hue-saturation-intensity (HSI) color space.

48. The system of claim 40 wherein the first color space comprises a YUV color space and the second color space comprises a hue-saturation-intensity (HSI) color space.

49. The system of claim 40 wherein the first color space is chosen from the group of YUV, YCrCb, CIE, HSV, YIQ, CMYK, RBGA, Pantone, Munsell, NCS and the second color space is chosen from the group of YUV, YCrCb, CIE, HSV, YIQ, CMYK, RBGA, Pantone, Munsell, NCS.

50. The system of claim 40 wherein the color brightness agent comprises a processor executing instructions.

51. The system of claim 40 wherein the color brightness agent uses a color look-up table or gamma transfer function storing data in the second color space to modify the color data.

52. The system of claim 40 wherein the brightness control agent further controls a backlight intensity of a display device.

53. An apparatus comprising:

a memory to store color data for an image to be displayed on a display device;

a first color transform agent communicatively coupled with the memory to modify the color data according to a first transform stored in a first look-up table;

a second color transform agent communicatively coupled with the memory to further modify the color data according to a second color transform stored determined by a second look-up table or gamma transfer function.

54. The apparatus of claim 53 wherein the second color transform agent comprises an agent to control image color brightness level and/or backlight intensity.

55. The apparatus of claim 54 wherein the first color transform agent comprises an electronic device operating system.

56. The apparatus of claim 53 further comprising a backlight control agent to control an intensity of light provided by an adjustable backlight source based on the second color transform.

57. The apparatus of claim 53 wherein the first color transform comprises a gamma look-up table.

58. The apparatus of claim 53 wherein the second color transform comprises a luminance look-up table.

59. A method comprising:

modifying color data for one or more portions of an image to be displayed using a first color transform;

modifying the color data for one or more portions of the image using a second color transform, wherein the second color transform is based, at least in part, on an image brightness profile and/or an ambient light level; and

storing the further-modified color data in a frame buffer.

60. The method of claim 59 further comprising modifying an intensity of light provided by a variable backlight source for a display device to display the image based, at least in part, on the image brightness profile and/or the ambient light level.

61. The method of claim 59 wherein modifying the color data using the first transform comprises:

retrieving the color data; and

applying a transform determined by accessing a color look-up color look-up table.

62. The method of claim 59 wherein modifying the color data using the second transform comprises:

receiving the color data; and

applying a transform determined by accessing a color look-up table to modify a color brightness of one or more portions of the image.

63. An article comprising a computer-readable medium having stored thereon instructions that, when executed, cause one or more processors to::

modify color data for one or more portions of an image to be displayed using a first color transform;

modify the color data for one or more portions of the image using a second color transform, wherein the second color transform is based, at least in part, on an image brightness profile and/or an ambient light level; and

store the further modified color data in a frame buffer.

64. The article of claim 63 further comprising instructions that, when executed, cause the one or more processors to modify an intensity of light provided by a variable backlight source for a display device to display the image based, at least in part, on the image brightness profile and/or the ambient light level.

65. The article of claim 63 wherein the instructions that cause the one or more processors to modify the color data using the first transform comprise instructions that, when executed, cause the one or more processors to:

retrieve the color data; and

apply a transform determined by accessing a color look-up color look-up table.

66. The article of claim 63 wherein the instructions that cause the one or more processors to modify the color data using the second transform comprise instructions that, when executed, cause the one or more processors to:

receive the color data; and

apply a transform determined by accessing a color look-up table to modify a color brightness of one or more portions of the image.

67. A system comprising:

a memory to store color data for an image to be displayed on a display device;

a first color transform agent communicatively coupled with the memory to modify the color data according to a first transform stored in a first look-up table;

a second color transform agent communicatively coupled with the memory to further modify the color data according to a second color transform determined by a second look-up table or gamma transfer function; and

an ambient light sensor.

68. The system of claim 67 wherein the second color transform agent comprises an agent to control image color brightness level and/or backlight intensity.

69. The system of claim 60 wherein the first color transform agent comprises an electronic device operating system.

70. The system of claim 67 further comprising a backlight control agent to control an intensity of light provided by an adjustable backlight source based on the second color transform.

71. The system of claim 67 wherein the first color transform comprises a gamma look-up table.

72. The system of claim 67 wherein the second color transform comprises a luminance look-up table.